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Aerospace Defense Command (Specified)

The specified command ADCOM was responsible to the President and the Secretary of Defense, through the JCS, for such missions as might be assigned by the Secretary of Defense with the President's approval. Commander-in-Chief ADCOM exercised operational control over aerospace defense forces of the U.S. in defense of the continental U.S. and Alaska under circumstances requiring unilateral action by the U.S. (that is, when circumstances dictated Canadian noninvolvement). Normally, however, forces assigned to CINCAD operating in the NORAD area were under the operational control of CINCNORAD. CINCAD was also responsible for the air defense of bases in Greenland, for providing assistance in the air defense of Mexico, and for defense against space systems. These responsibilities were set down in the JCS Unified Command Plan (UCP), last published in 1975.⁸

The JCS notified ADCOM early in 1980 that the UCP would be reviewed during the year in accordance with a decision made a year earlier calling for biennial review. Asked for its comments,⁹ ADCOM recommended two changes: the missions of CINCNORAD should be repeated in the UCP as they were stated in the NORAD TOR, and ADCOM's operational responsibilities for space defense would be clarified by a statement that CINCAD was responsible for "all space defense operations" instead of "defense against space systems" as the current UCP read.¹⁰ Review of the document was delayed while the Joint Staff considered command arrangements for the Rapid Deployment Force.¹¹ Late in the year, ADCOM said its February comments remained valid.¹² The 1965 UCP thus remained in effect throughout 1980.

Aerospace Defense Center

The Aerospace Defense Center's overall mission and its special responsibilities were set down in Air Force Regulation 23-9, dated 1 December 1979. In general, ADC, as a management headquarters, provided staff support for CINCNORAD/CINCAD. It developed overall operational doctrine for the strategic aerospace defense mission based on CINCAD operational concepts and planning; translated CINCAD's mission needs into program requirements, together with appropriate resource managers; and provided documentation of defense mission area needs to those managers for their use in the Planning, Programming and Budgeting System (PPBS). The Center was also resource manager of the NORAD Cheyenne Mountain Complex.

Organization

The reorganization of the major air command ADCOM, largely completed during 1979, decentralized management of USAF aerospace defense resources while maintaining the principle of centralized

operational control. Systems and manpower resources were transferred to Tactical Air Command, Strategic Air Command, and Air Force Communications Command in proportion to the particular responsibilities for aerospace defense each inherited. The major air command ADCOM then assumed the status of a paper organization awaiting official inactivation. The North American Air Defense Command and the U.S. specified command ADCOM were unaffected by the reorganization, and CINCNORAD/CINCAD continued to exercise operational control over all forces assigned, attached, and augmenting. Henceforth, USAF would provide staff support to NORAD/ADCOM (specified) through a new management headquarters, Aerospace Defense Center, activated 1 December 1979. By the end of the year, approximately 90 percent of the actions required by the reorganization plan had been accomplished. Two significant ones remained: the formal inactivation of the major air command, and the move of the new ADC headquarters from the Chidlaw Building in Colorado Springs to Peterson AFB.¹³

The USAF reorganization plan called for inactivation of the major command ADCOM on Implementation Day (I-Day), 1 September 1979, plus 12 to 18 months. But since no difficulties were encountered in the activation of ADC and the transfer of former ADCOM functions and units to the gaining commands, Hq USAF and ADC agreed to set the date to coincide with the end of the second quarter of FY-80. On 31 March, the command was inactivated without ceremony.¹⁵

Reorganization savings from this action had been announced as 790 manpower spaces and \$13 million a year after the first year (personnel moving and construction costs would reduce savings the first year to \$8 million). Experience under the new management, however, permitted more realistic appraisals of manpower needs by the commands. Also, some additional responsibilities not contemplated at the time of the reorganization were subsequently added. The net savings during the period from the end of October 1979 through 1980 then turned out to be 712 spaces* and \$8 million.¹⁶

*While the savings of enlisted and civilian spaces remained close to expectations, those for officers were less. The number of officers authorized for ADC, TAC, SAC, and Peterson AFB at the end of 1980 was 115 more than the number assigned to ADCOM headquarters before the reorganization (1,125 versus 1,010).

Resources

Manpower

In the middle of 1979 Hq USAF set the manning level of the new ADC at 1521 spaces. By the time the organization was activated on 1 December, however, that number had been increased to 1578 because of new mission requirements. This number included 308 for the management headquarters, 1147 for the Aerospace Defense Combat Operations Staff (ADCOS) in Cheyenne Mountain, and 123 for ADCOS detachments. This trend continued during 1980. Several new responsibilities, e.g., the NORAD Cheyenne Mountain Offsite Test Facility, added another 64 spaces. At the end of the year the ADC had 1642 authorized personnel. Authorized/Assigned personnel on 31 December were:¹⁷

Officers	Airman	Civilian	Total
607/603	685/739	350/320	1642/1662

NORAD's Joint Table of Distribution (JTD) manpower authorizations dropped 22 spaces or 4.2 percent during 1980. There were 527 manpower spaces authorized at the beginning of 1980 (244 officers, 277 enlisted, and 6 civilians) and 505 at the end of 1980 (237 officers, 262 enlisted, and 6 civilians). All but six of these spaces were filled.¹⁸

Budget

During FY 1980, the ADC Operations Operating Budget totalled \$36.254 million compared to FY 1979 when ADCOM, functioning as a major command, had an Operations Operating Budget of \$372.508 million. The FY 1980 budget request was apportioned out to commands involved in the reorganization. ADC received \$29.478 million. At the beginning of 1980, ADC received an additional \$6.776 million to fund such expenses as the repair of diesel generators, preparation of the Off-Site Test Facility, fuel price increases, and the cost of command realignment. In FY 1981, ADC's Operations Operating Budget would be \$44.005 million. The table on the following page provides additional detail.¹⁹

ADCOM OPERATIONS OPERATING BUDGET, FY 79, AND ADC OPERATIONS
OPERATING BUDGET, FY 80, FY 81 (in millions)

Major Force Program	FY 79	FY 80	FY 81
I Strategic Forces	\$353.866	\$34.687	\$42.034
II General Purpose Forces	4.062	0.429	0.910
III Intelligence and Communications	6.402	1.090	1.019
IV Airlift/Sealift	0.087	0.000	0.000
VII Central Supply and Maintenance	0.005	0.000	0.000
VIIIA Training and Other General Personnel Activities	1.366	0.005	0.006
VIIIB Medical Programs	6.669	0.000	0.000
IX Administration and Associated Activities	0.051	0.043	0.036
TOTAL	\$372.508	36.254	44.005

SOURCE: Operating Budget Authority by Major Force Program, Dir of Budget, HQ USAF, for FYs 79, 80, and 81.

Facilities

As 1980 began, the need to relocate from the Chidlaw Building to Peterson seemed imperative because it had been a major factor driving the ADCOM reorganization. The move would save \$1.3 to \$1.5 million paid to the General Services Administration (GSA) for renting the Chidlaw Building. NORAD/ADC would occupy Building 1470 at Peterson AFB under austere conditions without major construction to alter the building. This would keep construction costs under the \$500,000 limit allowable for minor construction under the Air Staff's P-341 program. However, it was anticipated NORAD/ADC could work a companion maintenance and repair project through SAC channels at an estimated cost of \$400,000.²⁰

The plans at the beginning of 1980 indicated NORAD/ADC would move sometime between 1 January and 1 April 1981. Early in 1980, the NORAD/ADC work force scheduled to move to Peterson AFB numbered about 600 personnel. That number grew to 635 by July, and to 695 by the end of the year. It was therefore no longer feasible to house in Building 1470 at Peterson AFB all those who were to transfer. In fact, as 1980 came to a close, NORAD/ADC had already asked for an extension of its occupancy of the Chidlaw Building through the summer of 1982,* and the actual date of its move was under evaluation.²¹

From 14 January 1980 to 18 January 1980, SAC, the new owner of Peterson AFB, along with representatives of NORAD/ADC, AFRES, MAC, and AFSC conducted a survey of the base preliminary to constructing a master plan for its use. As a result of this survey, SAC issued a proposed master plan on 27 June 1980. In it, SAC proposed that NORAD/ADC remain in the Chidlaw Building until December 1984. In the meantime, SAC would begin to bed down eight C-130s in October 1982 and was considering locating 13 KC-10s there in April 1984. Delaying NORAD/ADC's move to Peterson would facilitate SAC's addition of these two missions to Peterson AFB. SAC planners said that carrying out of their proposed schedule would create less turmoil in the shift of personnel.²²

By the end of 1980, the SAC Vice Commander in Chief, said additional beddown requirements for Peterson AFB had surpassed those of the plan envisioning complete movement of NORAD/ADC's personnel from the Chidlaw Building to Building 1470 in the winter or spring of 1981. SAC proposed three alternatives: (1) NORAD remain in the Chidlaw Building indefinitely, (2) NORAD remain in the Chidlaw Building until two administrative facility additions could be constructed, or (3) NORAD remain in the Chidlaw until a new headquarters for NORAD could be

*NORAD/ADC lease of the Chidlaw Building would expire in February 1983.

constructed. As far as NORAD/ADCOM/ADC was concerned, construction of a new headquarters was most desirable. This would promote efficiency and not disrupt the 46 AERODW mission. Joint SAC and NORAD/ADC advocacy would be required to work toward this goal. If the attainment of a new HQ for NORAD/ADC was not possible, and the project's fate was at best tenuous, then NORAD/ADC desired to gain the Air Staff's commitment to provide Building 1470 for a NORAD/ADC headquarters.²³

At the end of 1980, the Air Staff still based its position on the move of NORAD/ADC to Peterson upon a survey taken of Peterson AFB facilities by an Air Staff team 1-3 June 1979. The Air Staff survey team found that although some minor construction and building maintenance and repair work was needed, Building 1470, as it stood, was suitable for NORAD/ADC needs. However, responding to a 23 December 1980 SAC message, the DCS for Programs and Evaluation, HQ USAF, on 7 January 1981, acknowledged a new site survey of Peterson AFB by an Air Staff team was needed. Programs and Evaluations agreed the beddown of NORAD/ADC had to be readdressed, because the SAC mission there had increased during 1980.²⁴

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Defense System Program (DSP)

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Perimeter Acquisition Radar Attack Characterization System (PARCS)

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Assessment: The NORAD Cheyenne Mountain Complex

The NORAD Cheyenne Mountain Complex was the hub of the TM/AA system. Its 427M Command and Control System processed sensor data and generated warning and attack assessment information for use by CINCNORAD in making his assessment to the NCA.* Developed and installed between 1969 and 1979, at a cost of approximately \$200 million, it had been troubled by schedule slippages and cost overruns.¹¹³ A comprehensive review in 1977 by an Air Force Independent Review Group recommended bringing the system to an Equivalent Operational Capability (EOC), equivalent to the capability of the system it was replacing, as soon as possible. ADCOM agreed to take over responsibility for system development and testing. The EOC date was scheduled for October 1978, but further delays were encountered, and the 720 hour operational demonstration of the system, which validated it could perform the minimum operational capabilities required, was not completed until 4 September 1979. Next day, CINCNORAD declared it had reached EOC. A good deal of testing and software development remained, but since an off-line computer had not been purchased in an effort to keep costs down, testing and operations went on side by side in the NCMC.¹¹⁴

The Aftermath of the 9 November 1979 False Missile Incident

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* 427M also supported other missions such as space surveillance and warning and communications processing.

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** Klaxons and different colored lights.

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The GSA contract to accomplish architectural, mechanical, and electrical modifications to the Federal Building prior to installation of the new computer system was awarded on 28 March to three Colorado Springs firms: Sides Construction Company, general contractor; Whitney Electric Company, electrical subcontractor; and HPE Incorporated, planning and mechanical subcontractor. They began work on 3 April. No major problems encountered, and the facility was accepted on 30 June, before the scheduled date. The work cost \$605,000.¹²⁶

As one of the prime contractors on the NORAD Cheyenne Mountain Improvement Program (427H), Ford Aerospace Communications Corporation (FACC) was judged the only vendor able to perform the task of integrating leased and purchased computers (i.e., engineering the physical and logical configuration, modifying the ADPE as necessary, fabricating interfaces, and performing installation and checkout) within the time provided. AFSC's Electronic Systems Division (ESD),

* Soon renamed the Offsite Test Facility (OSTF) at the direction of Dr. Gerald Dinneen, Asst Sec Def, C³I.

** About \$9.2M in FYs 80 and 81 to fund the basic project, and thereafter about \$3.6M a year for supplies, equipment, and maintenance. The system's total life would extend through FY-83 and thereafter it was anticipated ADPE replacement actions would begin.

the contract manager, issued a letter contract to FACC in April for \$3.392M to purchase and lease equipment through FY-80.¹²⁷ FACC's cost proposal for the complete Firm Fixed Fee contract was \$8.9M for performance from April 1980 through September 1981. This was acceptable since it was about \$9,000 under the government's not-to-exceed price.¹²⁸ Equipment installation began 1 July. Delivery of leased computers from Honeywell Information Systems, Inc., the major subcontractor, and government furnished equipment proceeded on schedule. These equipments were installed and integrated with intercomputer processors, graphic processors, and associated interface adapters in time to meet the end of September IOC date.¹²⁹

On 29 September General Hartinger officially opened the OSTF.¹³⁰ The facility was organized as the OSTF Operations Branch, 427M Operations Division, Directorate of ADP Systems, DCS/Communications, Electronics and Computer Resources. It consisted of 21 officers, ajr-men, and civilians for 24 hours a day, seven days a week operation.¹³¹ Installation of the remainder of the equipment continued through the end of the year on schedule. Software programs from the 427M operational system were transferred from the NCMC to the Federal Building in October and November.¹³² At the end of 1980 there was every indication that this unusually successful project would meet the 1 April 1981 planned acceptance date for the complete system.

The 3 and 6 June 1980 False Missile Incidents

* The multiplexor took information coming from the main NCS computer and put it into a form suitable for transmission over a communications line.

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* The MEBU was a shadow processor to the NCS. It received and processed the same information as the NCS so that in the event of failure of the NCS, critical functions could continue.

** The failure did not occur in the computer, but in a circuit board used to connect the output of the computer to the communications line.

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The safeguards installed on the 427M system after the June incidents, improvements in management, and the longer term hardware and software changes planned for the TW/AA system, did not guarantee that at a future time and in a different way the system would not again generate ambiguous or false information. DOD officials emphasized, however, that human judgment could be relied upon to prevent any irretrievable actions from being taken on the basis of such information.¹⁴⁵ A Senate report on the June events, issued by Senators Gary Hart (D-CO) and Barry Goldwater (R-AZ), noted that those who operated the system had to deal constantly with the uncertainties of physical phenomena which were similar to missile launches and with simple failure complex missile warning system.¹⁴⁶ On 3 and 6 June the human hand intervened in the automatic process. General Hartinger said the events reemphasized the necessity for "man in the loop." The false computer data had been recognized as such and dealt with correctly. The system had worked, CINCPAC said, the way it should and his confidence in it had increased.¹⁴⁷

Warning to Europe

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CHAPTER III

SPACE DEFENSE

The U.S. had become increasingly dependent upon space platforms for communications, early warning, and intelligence collection. The Soviet Union's exploitation of space had followed a similar pattern but with a significant difference: it was first to put an antisatellite (ASAT) in orbit. As a consequence, Presidential and National Security Council directives (PD/NSC 37 and 42) emphasized the need to build greater survivability into US space systems, and for closer integration in the development of a space defense capabilities (surveillance, warning, and ASAT). USAF Manual 2-2, Functions and Basic Doctrine, said space defense operations "...must be able to detect, track, and identify all objects in space; provide warning of hostile acts in space and provide protection to aerospace resources; provide timely warning to the NCA of hostile actions against the United States and our allies; enhance deterrence by developing the capability to deny or nullify hostile acts in or through aerospace and must be capable of conducting sustained operations to detect and analyze aerospace threats."

CINCAD was the JCS specified commander with operational control responsibility for space defense.* For 20 years the Space Detection and Tracking System had tracked man-made objects in space, and the network was being expanded and improved. Data flowed into the Space Defense Operations Center (SPADOC), which became operational in October 1979. At this early state of its development, SPADOC was limited to providing satellite owners information with regard to avoiding collision with other satellites and on flight conditions. It would assume the negation mission, however, once the US achieved an operational ASAT.** To ADCOM, improvements of space platforms for surveillance, reconnaissance, communications, weather, etc., had high military utility. Their effectiveness, however, was directly related to their survivability and greater emphasis needed to be given to ways to insure they continued to operate during conflict.¹

* SAC became resource manager for all aspects of space missions with the ADCOM reorganization in late 1979. Responsibilities included programming and budgeting for support of sensors.

** The U.S. had maintained an ASAT capability (the USAF Program 505 and the USAF Program 437) on Kwajalein Atoll and Johnson Island in the Pacific from the early 1960s until 1974.

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Surveillance

(U) The Space Detection and Tracking System was a worldwide network of dedicated optical sensors, collateral and contributing radars,* and a Space Defense Operations Center (SPADOC). Its mission was to verify space launch events, identify all man-made objects in space, catalog them, and, by agreement, provide authorized agencies information of their status.** Two new sensors, the FPS-115 phased array radars at Otis AFB and Beale AFB, became operational during 1980 as collateral sensors. There were no other changes in the network. Improvements planned or underway during the year were deployment of a Pacific Radar Barrier (PACBAR) space surveillance sensor network of three sites and replacement of the older Baker-Nunn space camera system with the Ground Based Electro-Optical Deep Space Surveillance (GEODSS) system.

* See list pp 34 and 35 and map p 36.

** See p 37.

THE SPACE DETECTION AND TRACKING SYSTEM 1980

Site	Unit	Equipment
Cheyenne Mountain, CO	NORAD/ADCOM Combat Operations Center	Space Defense Operations Center (SPADOC) and SPADOC Computation Center (SCC)
Dahlgren, VA and 9 southern U.S. sites from CA to GA	U.S. Navy Space Surveillance System (NAVSPASUR)	Computational Center 3 transmitters and 6 receivers
Cold Lake, Alberta (SATTU)	Canadian Forces	Baker-Nunn Optical Sensor
St Margarets, New Brunswick (SITU)	Canadian Forces	Baker-Nunn Camera & SOI Photometer

USAF SPACETRACK SYSTEM DEDICATED SENSORS*

Edwards AFB, CA	Benlix Field Engineering Corp and Joseph Nunn Associates (contractors)	Baker-Nunn Camera
Mt John, New Zealand		
Pulmosan, South Korea		
San Vito, Italy		
Maui, Hawaii	OLLA, 46 AERODW	Maui Optical Tracking & Identification Facility (MOTIF) (Electro-Optical)

CONTRIBUTING SENSORS

Kwajalein Atoll**	Kiernan Reentry Measurement Site (KREMS)	Altair, Alcor Radars
Westford, MA	MIT Lincoln Lab	Millstone Hill Haystack Radars
Stallion, NM	USAF (AFSC)	GEODSS (Experimental Test Site)
Ascension Island	Eastern Test Range	FPQ-15
Antigua Island	Eastern Test Range	FPQ-14
Kaena Point, Hawaii**	Western Test Range	FPQ-14

COLLATERAL SENSORS

Thule, GL	Ballistic Missile Warning System (BMEWS)	4 FPS-50, 1 FPS-49
Clear, AK	Ballistic Missile Warning System (BMEWS)	3 FPS-50, 1 FPS-92
Fylingdales, UK	Ballistic Missile Warning System (BMEWS)	3 FPS-49
Eglin AFB, FL	SLBM	FPS-85 (Phased Array) (Alternate Space Computation Center)
Otis AFB, MA	SLBM	FPS-115 (Phased Array)
Beale AFB, CA	SLBM	FPS-115 (Phased Array)
Concrete, ND	Perimeter Acquisition Radar Attach Characterization System (PARCS)	FPQ-16 (Phased Array)
Shemya, AK	COBRA DANE	FPS-108 (Phased Array)
Pirincik Installation Diyarbakir, Turkey	TUSLOG Det 8	1 FPS-17, 1 FPS-79

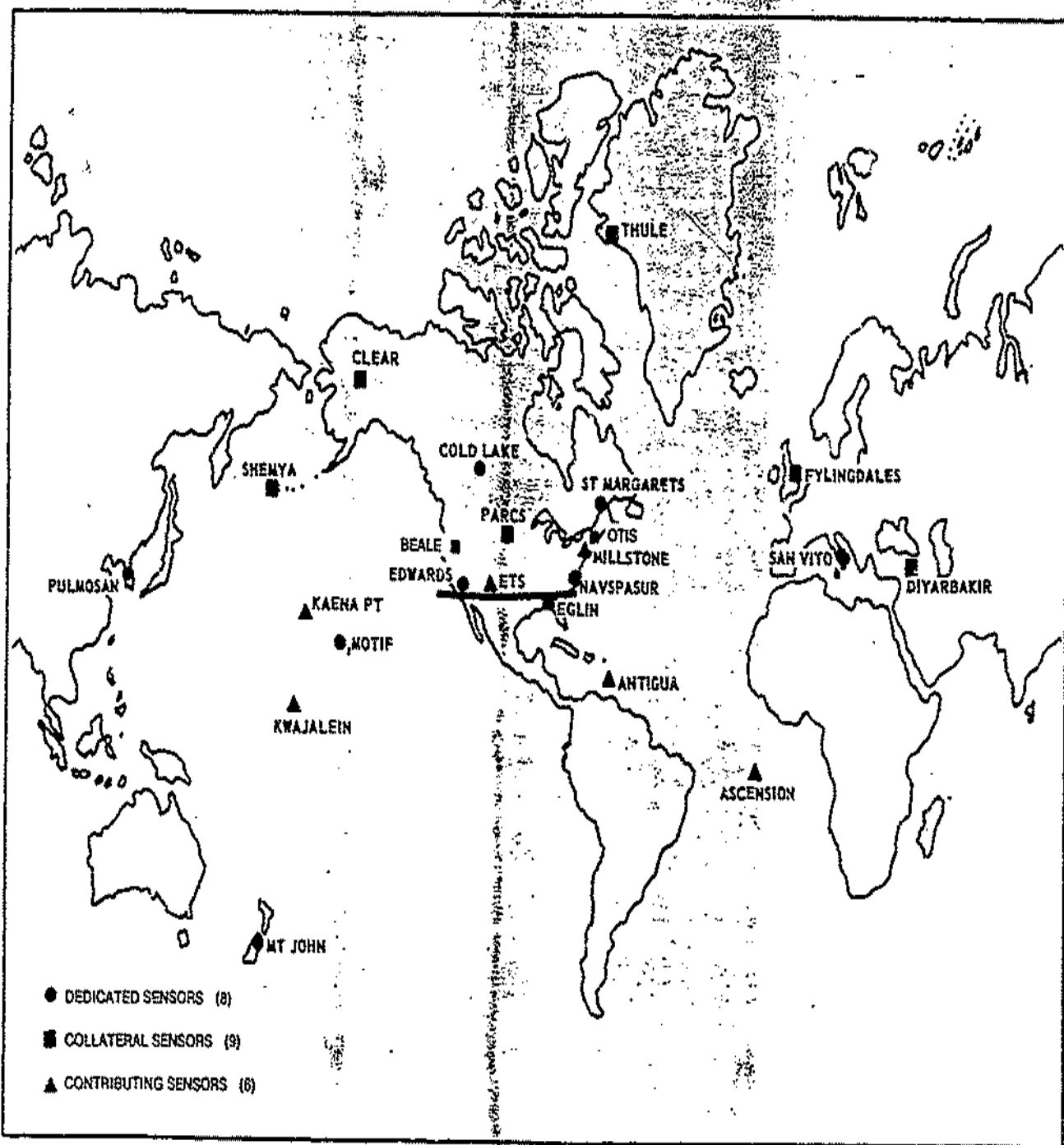
*The sensor network was divided into three categories:

- a. Dedicated - a NORAD/ADCOM operationally assigned sensor with a primary unclassified mission of support.
- b. Collateral - a NORAD/ADCOM operationally assigned sensor with a primary mission other than support.
- c. Contributing - a non-NORAD/ADCOM assigned sensor with a primary mission other than space detection and tracking support but which is under contract or agreement to support the system.

**Provides data on a reimbursable basis, when requested.

SOURCE: NORAD Forces and Program Change Summary (S-Revw 1 Jan 87), 1 Jan 81. (Material used unclassified).

SPACE DETECTION AND TRACKING SYSTEM



SPACE OBJECT DATA

	Catalogued	Launches	U.S. Pay- loads	U.S. Pay- loads	USSR Pay- loads	Other Nations	Objects Decayed	Net Gain Over Previous Year
1974	579	106	122	20	91	11	-	132
1975	929	125	151	28	109	14	-	431
1976	1,117	128	161	32	122	7	-	445
1977	902	124	136	19	105	12	523	379
1978	629	124	161	30	119	12	520	109
1979	474	106	123	17	101	5	549	75 (net loss)
1980	478	105	136	21	112	3	613	135 (net loss)

SOURCE: Ltr, Maj P. H. Ellis, CF, Chief, Space Analysis and Data Div, NCOC,
to Hq NORAD/PAM, "Information on 1980 Space Activities," 8 Jan 81

The Pacific Radar Barrier (PACBAR) Network

The PACBAR would consist of three radars: an AN/GPS-10 in the Philippines, the US Army's ALTAIR radar on Roi-Namur Island, Kwajalein Atoll, Marshall Islands; and another, as yet unspecified, radar with a preferred location on Guam.* The barrier's mission would be to fill a gap in early detection and tracking coverage of space launches from the USSR and China. It would also provide important support for testing of the U.S. ASAT, scheduled to begin in the middle of 1983.

In 1978, the United States Navy's Communications Station at San Miguel, Philippines, had been selected as the best location for the western anchor of PACBAR. The General Electric Company, builder of the AN/GPS-10 radar, was retained to remove it from storage at Clark AFB and reinstall it at San Miguel. Some concerns expressed by the Navy during 1979 with regard to electromagnetic compatibility of the radar with its communications equipment, and about possible radiation hazards, were satisfactorily answered, and a memo of agreement concluded in August between the Navy and the Air Force on use of the base.²

In January 1980, ADCOM DCS/Plans representatives first briefed representatives of the Philippines armed forces and government about the radar redeployment. Pacific Air Forces' Thirteenth Air Force continued these talks into the spring. Technical matters such as possible interference effects of the high power radar on the town neighboring San Miguel, overflight restrictions, and radiation hazards prolonged talks with officials of the armed forces but no major problems arose.³ The highest level of government remained silent, however. In November, US Ambassador Murphy discussed the issue with President Ferdinand Marcos, but no decision was forthcoming by the end of the year.⁴

At the end of 1980, the delay in gaining governmental approval to redeploy the radar threatened plans to have it ready by the middle of 1983 to support ASAT testing. Hq USAF asked SAC to consider an acceptable alternate site, and to provide the dates when concurrence of the Philippines government had to be obtained to meet the 1983 date and when a redeployment to another site must begin to meet the same date. Anticipating go-ahead in early 1981, ADCOM favored staying with the San Miguel site.⁵

* Development of the central anchor on Guam was not far enough advanced in 1980 to warrant consideration here. Optimistically, funds would become available in FY-82, with deployment in FY-85.

The eastern anchor of PACBAR would be the U.S. Army's ALTAIR radar.* Built originally for ballistic missile defense testing, it had served recently as part of the Western Test Range/Kwajalein Missile Range to track ballistic missile tests. Funds to modify the radar for space surveillance had been released in June 1979. The Army retained Sylvania, already its ALTAIR contractor, to modify the radar. Total cost was anticipated to be \$11.5M. Work began in July, with an IOC of May 1981 anticipated.⁶

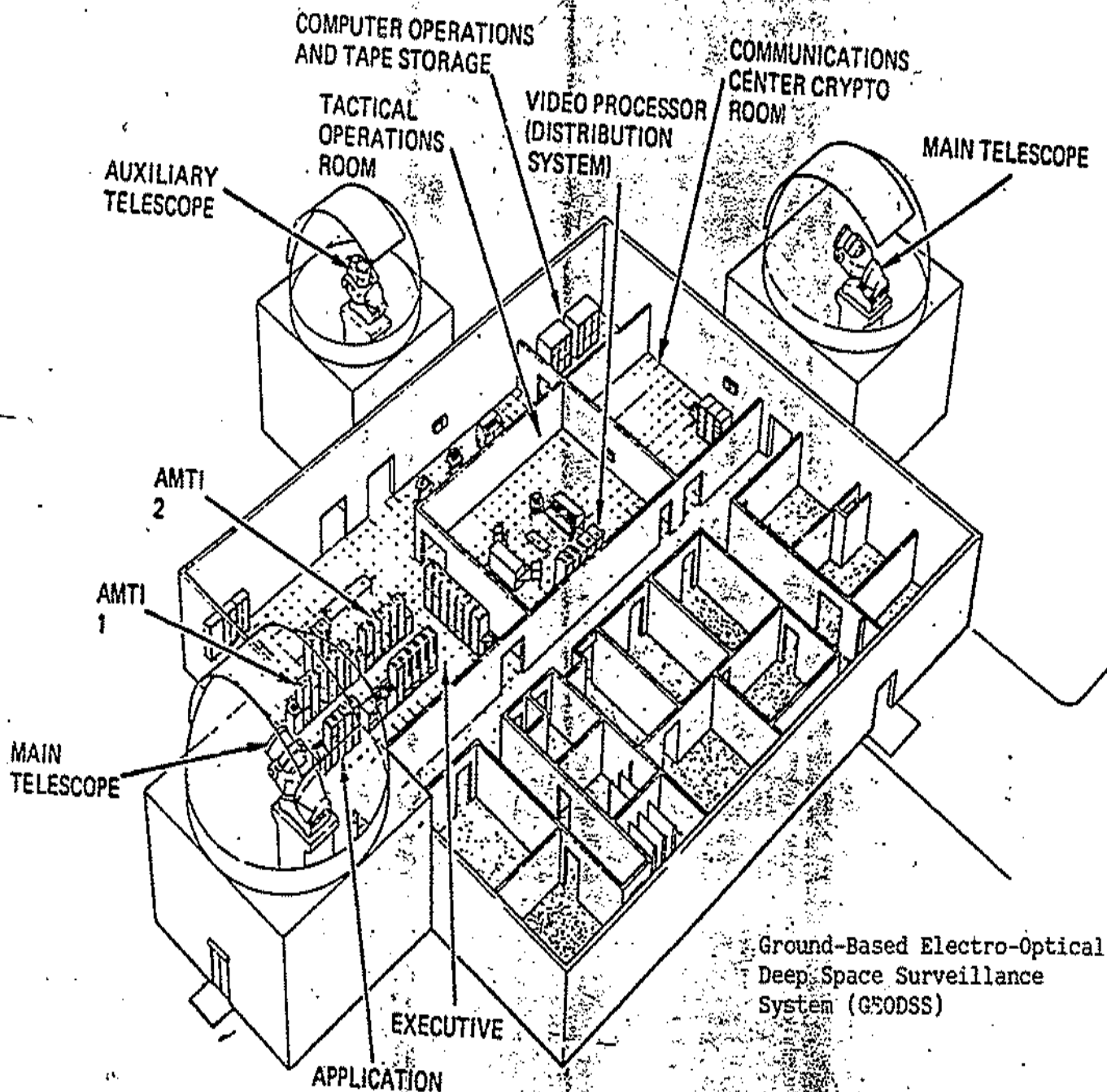
Contractor problems marked the program in 1980. At a management review meeting in early March, Sylvania announced, much to the surprise of ADC and evidently also Electronic System Division (AFSC), the completion date had slipped four and one-half months (to September 1981) and the cost had increased by \$670,000. A subsequent audit of the program by ESD and the Army Ballistic Missile Defense System Command indicated the contractor had underestimated the task (particularly software) and the slippage could be one year and \$1.5M. In August, Sylvania presented a revised program to the Army, which was accepted. It would deliver the near earth capability in July 1981 and the deep space features in September.⁸ The modification was funded in FYs 80 and 81 for \$13M (\$11.5M plus the \$1.5M overrun).⁹

Optical Sensors

For over 20 years the optical means of tracking satellites in deep space had been a worldwide network of camera sites operated on contract by Baker-Nunn and Associates. Six sites remained in operation during 1980. They were slated to be phased out during the next several years, however, in favor of a more technologically advanced system better able to cope with the increased numbers of objects in deep space. By name the Ground-Based Electro-Optical Deep Space Surveillance System (GEODSS), it was designed to detect, track, and gather optical signature data on space objects from 5,555 km to beyond 36,000 km from the earth. Thompson-Ramo-Woolridge (TRW) Inc. received a contract in early 1978 for three sites and an option for two more. Planning anticipated locating the sites around the globe at longitudinal intervals of about 72°, within 35° of the equator, and predominately in the northern hemisphere. Each site would consist of three telescopes connected to a tactical operations room (see illustration p. 41). Development of an experimental site (ETS) began in 1975 at Stallion Range Center, White Sands Missile Range, New Mexico, and during the next several years testing proved the technological feasibility of the system. By the end of 1979, the Stallion site had been selected as the first operational site, with an IOC in early 1981. It

* It was a two frequency radar (VHF and UHF) using a mechanically driven 150 foot dish. It had the capability to track satellites in near earth (below 3000 nm) and deep space (3000 nm and beyond) orbits.

SITE AND PRIME MISSION EQUIPMENT



would be followed during the year by the second and third sites, at Choejongsan, South Korea; and Mt Haleakala, Maui, Hawaii.* For operational purposes, sites four and five needed to be located in the eastern Atlantic and the Middle East.¹⁰

TRW continued integration of GEODSS hardware and software and in-plant testing throughout 1980. Although this work had been scheduled for completion in the middle of November, problems with software testing and documentation extended it into 1981. Construction of the first facility was completed in the middle of the year, but some discrepancies required additional work and the facility was not turned over to the Army (owner of the White Sands Missile Range) until 17 November. By the end of the year, all GEODSS equipment had been delivered to the site. Development Test and Evaluation at the site was still scheduled to begin 15 January, but seemed likely to slip at least a month.¹¹ Officially, IOCs for Sites II and III remained July and November 1981. The locations of Sites IV and V remained indefinite during the year, although interest focused directly on Portugal, for the eastern Atlantic site, and the island of Diego Garcia, in the Indian Ocean, as an interim location while a search continued for a more favorable Middle East site.¹² The Portuguese gave permission for a survey and a team visited the country late in the year and identified several promising sites.¹³ Diego Garcia would definitely be used as a site if atmospheric conditions there insure proper system performance. It would be surveyed early in 1981.¹⁴

Phaseout of the Baker-Munn system in favor of GEODSS would end Canadian participation in the space mission, since the two camera sites on Canadian soil (at Cold Lake and St Margarets) would close. The USAF and NORAD, anxious that Canada continue to cooperate actively with the US in space surveillance, suggested to NDHQ that it consider operating either a sixth GEODSS site in Canada or manning one in the southern hemisphere.¹⁵ NDHQ did not find the argument for a Canadian GEODSS compelling, however, because the site was not essential to the deep space surveillance mission; and it said a southern hemisphere site would be difficult to support. While it turned down the USAF proposal, NDHQ said it would continue to look for ways to support Canadian Forces interests in space.¹⁶ Meanwhile, it was agreed the Canadian site at Cold Lake would be the first to deactivate. The planned date was 1 June 1981. The camera at St Margarets would continue to operate until 1983, when the eastern Atlantic GEODSS site was slated to come on line.¹⁷

* The GEODSS site on Maui should not be confused with the SPACETRACK site on the island acquired in 1979, the Maui Optical Tracking and Identification Facility or MOTIF.

Protection and Negation

During 1980 ADCOM sought to improve its ability to provide elementary protection for friendly satellites by warning their owners of possible hostile acts directed against them. Future protection would consist of satellite hardening, countermeasures, and improved maneuvering capabilities. An antisatellite system was also under development during the year to achieve parity with the Soviets in that field, but national policy remained that space should be kept for peaceful purposes.

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Fundamental to the achievement of a Phase I SPADOC was completion of formal agreements for the exchange of information with US government, commercial, and foreign ally owners of space systems. The

first such Memorandum of Agreement (MOA), between ADCOM and AFSC's Space Division (covering SPADOC's relationship with the Air Force Satellite Control Facility at Sunnyvale, CA), was concluded in March 1980.²² It was followed by three more before the end of June: with AFCC, for the Air Force Satellite Communications System; with the Navy's Telecommunications Command, for the Fleet Satellite Communications System; and with the Defense Communications Agency, for the Defense Satellite Communications System. By the end of the year, MOAs had been signed with all but two military satellite owners: SAC, for the Defense Meteorological Satellite Program; and the Navy, for the TRANSIT system.²³ Agreements on general relationships were followed by a more detailed document, an Interface Control Drawing (ICD), which described just how SPADOC would interface with the user's space control center. The AFSC ICD, concluded in January 1981, was the first complete and detailed arrangement concluded between the Center and a satellite owner.²⁴

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* Air Force Systems Acquisition Review Council or AFSARC and the OSD Defense Systems Acquisition Review Council or DSARC.

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APPENDIX XII

SURVEILLANCE AND WARNING RADARS

31 December 1980

Ballistic Missile Early Warning System (BMEWS)

<u>Location</u>	<u>Radar</u>	<u>Detection</u>	<u>Tracking</u>
Thule AB, Greenland	4 FPS-50	(4 - 40° Sectors) +40° SLBM Sector using the FPS-49	1 FPS-49
Clear AFS, Alaska	3 FPS-50	(3 - 40° Sectors) + 50° SLBM Sector using the FPS-92	1 FPS-92
Fylingdales, United Kingdom			3 FPS-49

Sea Launched Ballistic Missile
Detection and Warning System (SLBM D&W)

<u>Location</u>	<u>Radar</u>
Beale AFB, CA	FPS-115 (Phased Array)
Otis AFB, MA	FPS-115 (Phased Array)
MacDill AFB, FL	FSS-7
Eglin AFB, FL	FPS-85 (Phased Array)

Perimeter Acquisition Radar Attack Characterization
System (PARCS)

<u>Location</u>	<u>Radar</u>
Concrete, ND	AN/FPQ-16 (Phased Array)

COBRA DANE and TUSLOG Det 8 (Multi-Mission):
Intelligence, SPACETRACK/Missile Warning

<u>Location</u>	<u>Radar</u>	<u>Detection</u>	<u>Tracking</u>
Shemya AFB, Alaska	AN/FPS-108 (Phased Array)		
Pirincik Installation near Diyarbakir, Turkey		1 FPS-17	1 FPS-79

NOTES

CHAPTER I - MISSION, ORGANIZATION, RESOURCES

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3. PJBD, 25 Feb 80, p 12.

4. Atch, "Summary of Minutes," (S-Revw 25 Apr 05), to SSS (S-Revw 29 Apr 05), Maj Gen C. A. LaFrance (CF), DCS/P1, Pol, Progs, and Rqmts, NORAD to N/CC et al., "Summary of Military Cooperation Committee Mtg (22-25 Apr 80)," 20 May 80; SSS (U), Maj Gen C.A. LaFrance (CF), DCS/P1, Pol, Progs, and Rqmts, NORAD to N/CC et al., "NORAD Agreement," 6 May 80.

5. Memorandum (See Distribution) (S-Revw 19 Jun 05), Maj Gen G. D. Miller, Steering and Coordinating Member, PJBD, "Journal of Discussions and Decisions of the 156th Meeting of the Permanent Joint Board on Defense, Canada-US," 19 Jun 80, p 21 (material used G).

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7. Msg (C-Canadian document), NDHQ to NORAD, for Maj Gen LaFrance, "Renewal of NORAD Agreement - SCEAND Report," 191700Z Dec 80 (Doc 1).

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9. Msg (U), JCS to CINCAD et al., "Biennial Review of Unified Command Plan," 091610Z Jan 80.

10. Msg (C-Dec1 11 Feb 86), CINCAD/CV to JCS/J5, "Biennial Review of the Unified Command Plan," 152300Z Feb 80.

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13. The reorganization of ADCOM is discussed in the History of ADCOM/ADC (S-RD), 1979, pp 4-48.

14. Msg (U), USAF/PAX to ADC/XP, "USAF P-Plan 79-3, Inactivation of ADCOM (MAJCOM)," 031645Z Mar 80; Msg (U), ADC/XP to Hq USAF/PAX, "Inactivation of ADCOM," 211545Z Mar 80.

15. ADC SO GC-3, 24 Mar 80 (Authority, Ltr, Col R. L. Binford, Dep Dir M&O, DCS/M&P, Hq USAF to CINCAD, "Inactivation of Hq ADCOM, a Major Command," 19 Mar 80).

16. Atch (U), "ADCOM Realignment Costs/Cost Avoidances as of 30 December 1980," to Ltr (U), Col L. R. Ravetti, DCS/Comptroller, ADC, to all DCSs, and SSEs, same subject, 4 Feb 81 (Doc 2).

17. DCS/Personnel Staff Agency Historical Report, Jul-Dec 80.

18. Information obtained from Joint Services Manning DCS/Manpower and Personnel, NORAD.

19. See Table on Operations Operating Budget, Historical Report (U), DCS/Comptroller to Office of History, "Historical Report, Jul-Dec 80," 9 Jan 81; Memo (U), Directorate of the Budget, DCS/Comptroller to Office of History, "FY 1980 O&M Funding," 23 Nov 81.

20. Ltr (U), Dir of Civil Engineers, DCS for Logistics, ADC to Programs Div, Dir of Eng Services, DCS of Logistics and Engineering, Hq USAF, "P-341 Project, ADCOM HQ Reorganization," 25 Jan 80; Ltr (U), Dir of Eng Services, DCS of Logistics and Engineering, Hq USAF to Dir of Civil Engineering, DCS for Logistics, ADCOM, "Programming for NORAD/ADC HQ Relocation to Peterson AFB," 27 Nov 79.

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10. Interest Paper on BMEWS TOR Upgrade (U), prep by Capt M. L. Hunter, XPDW, 17 Oct 80 (Doc 8); Interest Paper on BMEWS TOR Upgrade (Site II Activation) (U), prep by Capt Hunter, n.d., circa 29 Oct 80 (Doc 9).

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41. Msg (S-Revw 1 Mar 88), CSAF/CVA to CINCSAC/CV and CINCAD/CV, "Termination of Operations...AN/FSS-7 Radars," 042309Z Mar 80.

42. Msg (S-Dec1 1 Jan 85), CINCSAC/CV to CSAF/CVA, "Otis PAVE PAWS IOC...", 291300Z Mar 80 (Doc 29). (U) The 6MWS reported that as of 21 February, it was conducting all operations maintenance and civil engineering activities "as if the site were fully operational." (Msg (U), 6MWS/CC to Hq ADCOM/DOF, "PAVE PAWS Site I Status," 221630Z Feb 80.) The saga of the Otis diesels is told in E. M. Del Papa, Of Missiles and Microwaves: ESD and the PAVE PAWS Radar System (FOUO), History Office, ESD, 1981.

43. Msg (S-Dec1 31 Oct 89), ADCOM/J-3 to NMCC/Surveillance Officer, "Otis PAVE PAWS Operational Readiness," 031830Z Apr 80 (Doc 30); Msg (S-Dec1 1 Jan 85), 6MWS/CC to CINCAD/DOC, "Commander's Situation Report," 040001Z Apr 80 (Doc 31). (U) At least one observer noted the contrast between the lack of fanfare surrounding the event of the radar becoming operational and controversy which arose when construction of the radar was first proposed. Local opposition began to fade when measurements of radiation levels emitted by the radar indicated they were far below those mandated by federal health guidelines. The U.S. Congressman from the area, Representative Gerry Studds, noted public concern had lessened to the extent that at his last two open meetings in the area the subject of the Otis site did not come up. (Robert Cooke, "PAVE PAWS Radar Station Starts Operation on Cape Cod," Boston Globe, 5 Apr 80, p 15.)

44. Msg (U), Hq SCCA/LG2 to Hq AFLC/LOWE, "Phase Down Plan for AN/FSS-7," 082124Z Apr 80; Msg (U), CINCAD/CC to SAC/DO et al., "Charleston and Ft Fisher FSS-7 Performance," 041600Z Apr 80 (Doc 32).

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46. Msg (U), ESD/ACB to AFSC/ACB, "Early Delivery of Site II--PAVE PAWS," 051600Z Apr 79.

47. Talking Paper (U), "PAVE PAWS," Maj Nelson /XPD, 5 Aug 79; E. M. Del Papa, Of Missiles and Microwaves: ESD and the PAVE PAWS Radar System (FOUO), History Office, ESD, 1981, pp 51-52.

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50. Msg (U), ESD/DEC to Hq SAC/DE, "PAVE PAWS...Power Plant Test," 291430Z Feb 80; Msg (U), Hq AFESC/DEM to ESD/DEC, "PAVE PAWS...Power Plant Test," 041400Z Mar 80; Msg (U), OLK, AFESC/CEMIRT to AFESC/DEMC, "Beale PAVE PAWS Power Plant," 052123Z Mar 80; Msg (U), ESD/DEC to AFESC/DE, "PAVE PAWS Power Plant," 202150Z Mar 80; Msg (U), AFESC/DEM to ESD/DEC, "PAVE PAWS Power Plant," 251400Z Mar 80; Msg (U) ESD/DEM to AFESC/DEM, "PAVE PAWS Power Plant," 281640Z Mar 80; Msg (U), AFESC/DEM to ESD/DEC, "PAVE PAWS Power Plant," 312135Z Mar 80.

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52. Msg (U), ADCOM/J3 to SAC, "Dual Operation - Beale PAVE PAWS and West Coast FSS-7 Units," 282345Z Mar 80; Msg (U), SAC/SX to NMCC/ Surveillance Officer, "Transmission of Beale PAVE PAWS Data," 232010Z Apr 80; Msg (S-Dec 1 Oct 80), SAC/SXM to Hq USAF/PAX et al., "Dual Operations...", 302140Z Apr 80.

53. Msg (S-Dec 1 Oct 89), SAC/SX to USAF/XOX et al., "Possible Delay of Beale PAVE PAWS Initial Operational Capability," 271630Z May 80.

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56. SSS (S-Dec 1 Oct 94), Brig Gen B. R. Campbell (CF), Asst DCS/O, NORAD to A/CC et al., "ADCOM Position Concerning Beale IOC," 30 Jun 80 (Doc 33); Ltr (S-Dec 7 Jun 86), Lt Gen J. V. Hartinger, CINCAD to CINCSAC/CV, "Beale PAVE PAWS IOC," 14 Jul 80 (Doc 34).

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67. Hist ADC (S-Revw 1 Dec 98), FY-73, pp 166-167; Hist CONAD/ADC (S-FRD), FY-75, p 76 (material used S).

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69. Ltr (TS-Revw 5 Oct 98), Hill to Brown, 5 Oct 79 (material used S).

70. Talking Paper on PAVE PAWS (U), Maj Nelson/XPD, 10 Dec 79.

71. Ltrs (S-Dec 1 Apr 00) and (S-Dec 1 Jul 00), Hartinger to Brown, 1 Apr 80 (Doc 4) and 1 Jul 80 (Doc 3).

72. Executive Summary, Master Plan for TW/AA (S-Revw 17 Mar 00), Atch 1 to SSS (S-Revw 17 Mar 00), Col L. E. Thomas, Dir Sp & Msl Wrng Ops, NORAD/J-3 to J-3, 16 Apr 80 (Doc 2).

73. Talking Paper on PAVE PAWS (U), Maj Nelson/XPD, 14 Apr 80 (Doc 44); Atch (S-Dec 1 Apr 86), "Comments on Dep Asst Sec AF Ltr, 24 Apr 80," to Ltr (S-Dec 1 Apr 86), Brig Gen W. E. Lindeman, DCS/P1, Pol, Progs and Rqmts, ADC, to Dr. H. F. Cooper, Dep for Str and Sp Sys, OASAF, 16 Jun 80 (Doc 6).

74. Ltr (S-Dec 31 Dec 86), Brig Gen W. E. Lindeman, DCS/PI, Pol, Progs and Rqmts, ADC, to USAF/CVSB, "FY 83-87 POM Submission," 1 Dec 80, with 3 Atchs.

75. NORAD/ADCOM (J-5)/ADC (XP) Staff agency Historical Report (S-Dec 31 Dec 87), Tab 3, Jul-Dec 80.

76. Background Paper on Justification for Priority of SLBM Warning Assets, FY83-87 POM (S-Dec 31 Oct 89), Capt Sprague/J-5, NORAD/ADCOM, 16 Dec 80 (Doc 45).

77. Aerospace Defense Command Objectives Plan (S-FRD), 1983-90 (ADCOM 83-90), May 1980, ADCOM/J-5, pp 89-90 (material used S); Msg (S-Revw 31 Dec 86), ADCOM/DOF to SD/YGS, "Stationkeeping Criteria," 242200Z Jan 80; Interest Paper on the Defense Support Program (DSP) (S-Revw 1 Dec 99), prep by Maj N. W. Naccari/J-5DW, 14 Oct 80 (Doc 46); Talking Paper On Sensor Evolutionary Development (SED) (S-Revw 1 Dec 99), prep by Lt Col J. D. Kemp/J-5D, 8 Dec 80 (Doc 47).

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81. Msg (S-Revw 31 Dec 98), SD/YGD to ADCOM/J-3, Flight Four End-of-Life," 122115Z Jun 80.

82. Msg (S-Revw 1 Dec 98), ADCOM/J-3 to SD/YGD, "Flight Four End-of-Life," 231349Z Jul 80.

83. SSS (S-Revw 1 Dec 98), Col L. E. Thomas, Dir Sp & Msl Wrng Ops, J-3 to J-3, "Flight Four End-of-Life," 8 Sep 80; Msg (S-Revw 1 Dec 98) SD/YG to AFSCF/VOD, "Support of IRON 6157 (Flight 4)," 141853Z Nov 80.

84. Talking Paper on Large Processing Station Upgrade (LPSU) (S-Revw 1 Dec 99), prep by Lt Col Jay D. Kemp/J-3D, 8 Dec 80 (Doc 54).

85. NORAD/ADCOM (J-3) and ADC (DO), Staff Agency Historical Report, Jan-Jun 80, Atch 2, p 2 (S-Revw 1 Dec 98) (material used U); NORAD/ADCOM (J-3) and ADC (DO) Staff Agency Historical Report, Jul-Dec 80, Atch 6, p 1 (S-Revw 1 Dec 08) (material used U).

86. Hist of ADCOM/ADC, 1979 (S-RD), pp 95-66 (material used S-Revw 1 Dec 99); SSS (S-Revw 1 Dec 98), Brig Gen W. E. Lindeman, DCS/PI, Pol, Progs and Rqmts, ADCOM to A/CC et al., "Simplified Processing Station Status," 16 Apr 80 (Doc 55); Ltr (S-Revw 1 Dec 00), Col L. E. Thomas, Actg Dir Sp & Msl Wrng Ops, ADC/DOF to ADC/XPD, "User Inputs to the DSP PAR," 11 Feb 80 (Doc 56); Ltr (S-Revw 1 Dec 98), Maj Gen H. W. Leaf, Comdr AFT&E Center to Gen Lew Allen, Jr., CSAF, n.s., 31 May 80 (Doc 57).

87. SSS (S-Revw 1 Dec 98), Brig Gen W. E. Lindeman, DCS/PI, Pol, Progs, and Rqmts, ADCOM to A/CC et al., "Simplified Processing Station Status," 16 Apr 80 (Doc 55); Talking Paper on Simplified Processing Station (SPS) (S-Revw 1 Dec 99), prep by Lt Col J. D. Kemp, J-5, ADCOM, 8 Dec 80 (Doc 58).

88. SSS (U), Col L. E. Thomas, Dir Sp & Msl Wrng Ops, J-3 to J-3, "SPS FOT&E Phase II," 5 Feb 80.

89. Hist of ADCOM/ADC, 1979 (S-RD), pp 94-95 (material used S-Dec 31 Dec 99).

90. Booklet (S-Revw 30 Sep 00), "System Operational Concept (SOC) for Mobile Ground Terminals (MGT)," ADC/XPDW, 9 Feb 81, pp 1-1, 1-2.

91. Msg (S-Revw 31 Dec 98), USAF/RDS to SAC/SX, "... (MGT) for the Defense Support Program," 251330Z Mar 80 (Doc 59).

92. SSS (S-Revw 1 Dec 98), Brig Gen W. E. Lindeman, DCS/PI, Pol, Progs and Rqmts, ADC to A/CC, "... (MGT) Procurement Strategy and Request for Proposal," 8 Jan 80, with 1 Atch, Msg (S-Revw 1 Dec 98), ADC/XP to USAF/RD, same subj, 301415Z Jan 80 (Doc 60); Msg (S-Revw 31 Dec 99) ADCOM/J-5 to USAF/RDS/XOK/XOO/XOX/PAX, "... (MGTs) for the Defense Support Program," 062040Z May 80 (Doc 61); Msg (S-Revw 1 Dec 98), SAC/SX to USAF/RDS, "... (MGT) Proposal," 242250Z Jan 80 (Doc 62).

93. Ltr (S-Dec 1 Apr 86), H. F. Cooper, Jr., Dep for Str & Sp Sys, OSAF to Lt Gen J. V. Hartinger, Comdr ADC, 24 Apr 80 (Doc 5).

94. Ltr (S-Dec 1 Apr 86), Brig Gen W. E. Lindeman, DCS/P1, Pol, Progs and Rqmts, ADC to H. F. Cooper, 16 Jun 80, with 1 Atch, "Comments on Dep Asst Sec AF Ltr, 24 Apr 80" (Doc 6).

95. SSS (S-Revw 1 Dec 08), Col W. R. Kenty, Asst DCS/P1, Pol, Progs and Rqmts, ADC to A/CC et al., "... (MGT) System Operational Concept (SOC)," 6 Jan 81, with 1 Atch (Doc 63).

96. SSS (S-Revw 1 Dec 98), Col W. R. Kenty, Asst DCS/P1, Pol, Progs and Rqmts, ADC to A/CC et al., "New Program Management Directive (PMD) for DSP," 18 Nov 80, with 2 Atch, 1: (S) Background Paper On DSP PMD, and 2. (S) PMD R-S 4047(18)/12431F (Doc 64).

97. Talking Paper on Mobile Ground Terminal (MGT) (S-Revw 1 Dec 99), prep by Lt Col J. D. Kemp, J-5, ADCOM, 8 Dec 80 (Doc 65).

98. Msg (S-Revw 31 Dec 98), USAF/RDS to AFSC/SDS, ADC/XPD, "... (DSP) Ground Station Reliability," 252045Z Apr 80 (Doc 66).

99. Msg (S-Revw Dec 98), AFSC/SDS to USAF/RDS, "... (DSP) Ground Station Reliability," 051515Z May 80 (Doc 67); Msg (S-Revw 1 Dec 90), USAF/RDS to AFSC/SD, "DSP Mission Availability," 042225Z Sep 80 (Doc 68).

100. Ibid.

101. Msg (S-Revw 1 Dec 99), ADC/XP to USAF/RDS, "DSP Mission Availability," 101730Z Sep 80 (Doc 69); Msg (S-Revw 1 Dec 98), SAC/SXR to USAF/RDS, "DSP Mission Availability," 111415Z Sep 80 (Doc 70).

102. Ltr (S-Dec 1 Dec 99), Maj N. W. Naccari, J-5, ADCOM and Capt L. W. Bryant, J-3, ADCOM to J-5/J-3, "Trip Report," n.d., circa 12 Sep 80 (Doc 71); Msg (S-Revw 1 Dec 98), USAF/X00 to ADCOM/J-5, "DSP Mission Availability," 021325Z Oct 80 (Doc 72).

103. Msg (S-Revw 1 Dec 08), ADCOM/J-5 to USAF/X00 (combined ADCOM-SAC Msg), "DSP Mission Availability," 232240Z Oct 80 (Doc 73).

104. Msg (S-Revw 1 Dec 98), USAF/RDS to ADC/DO, "... (DSP) Availability," 231630Z Dec 80 (Doc 74).

105. SSS (S-Revw 1 Dec 98), Col W. R. Kenty, Asst DCS/P1, Pol, Progs and Rqmts, ADCOM to DO et al., "... (SPS) Overseas Siting Site Survey Report," 4 Mar 80 (Doc 75); Msg (S-Revw 1 Dec 08), ADCOM/J-5 to USAF/X00 (combined ADCOM-SAC Msg), "DSP Mission availability," 232240Z Oct 80 (Doc 73); Msg (S-Revw 1 Dec 98), SD/YG to ADCOM/J-5, "Technical Comment to DSP Mission Availability," 041600Z Nov 80 (Doc 76).

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108. SSS (S-Revw 1 Dec 98), Brown to A/CC, 9 Jan 81 (Doc 81).
109. Hist of ADCOM/ADC (S-RD), 1979 pp 89-91 (material used S-Dec 1 Dec 98); Talking Paper (U) on ...EPARCS, Lt Col B. K. Hufford, XPD, 25 Mar 80 (Doc 83).
110. Msg (U), ESD/OCT to AFSC/SDE, "Termination of EPARCS Contract," 131903Z Jun 80; SSS (S-Revw 31 Dec 99), Brig Gen W. E. Lindeman, DCS/P1, Pol, Progs and Rqmts, ADC to A/CC et al., "Enhanced PARCS," 19 Jun 80 (Doc 84).
111. NORAD/ADCOM (J-5)/ADC (XP) Staff Agency Historical Report, Jul-Dec 80, TAB 3.
112. SSS (S-Dec 1 Dec 98), Gen B. K. Brown, DCS/O, NORAD/ADCOM, to NCC et al., "PARCS Mission Statement," 10 Dec 80, with 3 Atchs (Doc 85). Gen Hartinger's approval noted on the document.
113. Ltr (U), Col H. R. Witzig, Dir, Cmd & Con (XPC), ADC to Lt Col C. Lang, OUSDRE (SYSS), Def Sys, "P427M Funding History," 3 Dec 79. Funding was calculated as follows:
- | | |
|-----------------|---------------------------------------|
| \$132.6M | ESD Funding (1972-79) |
| 70.5M | ADCOM Funding (1972-79) |
| <u>\$203.1M</u> | total ESD/ADCOM Funding through 1979. |

An April 1977 report on the 427M by an Air Force Independent Review Group (headed by Brig Gen R. T. Herres) examined the system in detail

113. (contd) and recommended what had to be done to get it operational. The Government Accounting Office prepared a critical report on the system in 1978 (Report LCD-78-117, "NORAD's Information Processing Improvement Programs--Will it Enhance Mission Capability?" 21 Sep 78.).

114. Atch 1 (U), "Major Events 427M Program," to Ltr (U), Col Witzig, Dir Cmd & Con (XPC), ADC to all DCS's and SSE's, "History of Program 427M," 25 Jun 80, pp 42-69; Msg (S-Revw 6 Sep 99), CINCNORAD to Hq USAF et al., "NCOC Transition to 427M," 102005Z Sep 79; Exerpt, "A Talk with the Sec AF (Dr Hans Mark)," Honolulu Star Bulletin, 7 Jul 60, p 11.

115. Listed here are periodic progress reports on NORAD efforts to comply with IG findings. The basic inspection report is TIG Report Support to NORAD." PN 80-2-56, 3-15 Dec 79, distributed 13 Jan 80 (Doc 163, Hist of ADCOM/ADC, 1979). Updates by ADC on this report through 1980 are contained in: Ltr (U), Maj Gen W. E. Cooper (USA), CS/NORAD, to Hq AFISC/IGF, "Special Inspection of USAF Support to NORAD...", 16 Apr 80, with 1 Atch (S-Revw 1 Mar 99/Privileged Document), "Hq ADC Responses to Hq AFISC Special Inspection..." (Doc 86); Ltr (U), Maj Gen W. C. Moore, VC/ADC to AFISC/CC, "Follow-up of Special Inspection...", 28 Jul 80, with 2 Atchs: (S-Revw 1 Mar 99) (1) "ADC Responses which require further action," (2) "ADC Update to 18 Apr 80 Rpt" (Doc 87); Ltr (U), Gen Moore, VC/ADC to AFISC/AA, "Follow-up to Special Inspection...", 28 Nov 80, with 1 Atch (S-Revw 1 Mar 99/Privileged Document), "Hq ADC Update to Hq AFISC Special Inspection," (Doc 88).

116. Ltr (U), Lt Gen J. V. Hartinger, CINCNORAD to Gen L. Allen, CSAF, USAF, n.s., 14 Mar 80 (Doc 89).

117. Msg (S-Dec1 3 Jan 00), NORAD/DO to all NORAD Region CCs, "NORAD Aircraft Flush Authority," 040005Z Jan 80; Msg (S-Dec1 28 Jan 00), CINCNORAD to all NORAD Region CCs, "Aircraft Flushing Authority," 282355Z Jan 80 (Doc 90); Ltr (S-Revw 23 Nov 99), Lt Gen Hartinger, CINCNORAD to Gen D. Jones, Chairman, JCS, n.s., 28 Jan 80 (Doc 91).

118. Msg (S-Revw 15 May 98), NORAD/DO to AID 7812, "Missile Attack Warning/Interim Emergency Change 1 to N/A Reg 55-19, Vol III, 15 May 79," 171800Z Jan 80; Msg (S-Revw 30 Jan 00), HQ NORAD/J-3 to NCOC/DO et al., "NAS Amber Warning Test," 051520Z Feb 80; Msg (U), Hq NORAD/J-6C to 20NR et al., "NORAD Alert System," 101530Z Mar 80 (Doc 92).

119. Msg (U), NORAD/J-6 to HQ TAC/DC, "NORAD Alert System," 261840Z Jun 80; Msg (S-Revw 1 Jul 00), NORAD/J-3 to AIG 7234, "NORAD Alert System Malfunctions," 281620Z Oct 80; Msg (S-Revw 1 Jan 00), NORAD/J-3 to All NORAD Regions et al., "Revised Procedures in Response to NORAD Alert System Amber or Red Activation," 042200Z Nov 80 (Doc 93).

120. Ibid.; DCS/O Staff Agency Historical Report (S-Revw Dec 08), 1 Jul-31 Dec 80, 27 Jan 81 (DOO Narrative, p 2).

121. Msg (S-Revw 26 Dec 99), NORAD/J-3 to JCS/J-3/C3S, "Suspension of 427M Development Testing," 261415Z Dec 79 (Doc 178, Hist of ADCOM/ADC, 1979); DCS/O Staff Agency Historical Report (S-Revw 1 Dec 99), 1 Jan-30 Jun 80, Atch 5; DON Narrative (material used (U)); Ltr (S-Dec) 1 Apr 00, Hartinger to Brown, 1 Apr 80 (Doc 4).

122. Msg (S-Revw 31 Jan 00), JCS/J-3 to CINCNORAD, "NORAD-427M System," 011654Z Feb 80; Ltr (U), F. J. Carr, Commissioner, Automated Data and Telecommunications Services, GSA to Hon W. Graham Clayton, Jr., Dep Sec Def, 19 Feb 80.

123. ESD Acquisition Plan Oct 80-1 (U), "NORAD Validation Center (NOVAC)," 11 Mar 80; Interest Paper (U), "The NORAD Off-Site Test Facility," Col F. D. Richards, NORAD/J-6, 27 Mar 80.

124. Ltr (FOUO), Col W. M. Carruthers, Dep Dir Computer Resources (systems and Resources), Dir Computer Resources, Hq USAF to Hq ADC/KR, "NMC Off-Site Computer Facility Data Projected Directive (DPD) HAF A80-1," 6 Mar 80, with 1 Atch: DPD ADC A80-1 (Doc 94).

125. Ltr (U), Col Richards, ADP Program Single Mgr, Hq ADC to Hq USAF/ADCM, "NORAD Off-Site Test Facility Data Project Plan (DPP) ADC A80-1," 3 Apr 80, with 1 Atch: DPD ADC A80-1 (Doc 95).

126. Memo for Record (U), "Cost for Off-Site Facility/Site Preparation Work," Lt Col J. E. Bartos, Ch, ADP Resources Mgt Div, DCS/Comm, Elect, and Computer Resources, 1 Apr 80; Status Report (U), "Status of Off-Site Test Facility Site Preparation as of 7 Apr 1980," n.d., circa 7 Apr 80.

127. ESD Acquisition Plan Oct 80-1 (U), "NORAD Validation Center (NOVAD)," 11 Mar 80; Ltr (U), T. R. Long, Prog Mgr, NORAD Off-Site Test Facility to Hq USAF/ACD/XOK/RDS, "Monthly Status Report-OSTF," 5 May 80 (Doc 96).

128. Ltr (U) T. R. Long, Prog Mgr, NORAD OSTF to Hq USAF/ACD/XOK/RDS, "Monthly Status Report...", 1 Jul 80 (Doc 97).

129. Atch 3, Point Paper (U), n.d., to Ltr (U), T. R. Long, Prog Mgr, NORAD OSTF to Hq USAF/ACD/XOK/RDS, "Monthly Status Report...", 1 Jul 80 (Doc 97); Ltr (U), R. E. Best, Asst Dep for Contracting and Manufacturing, Space Div (AFSC) to T. R. Long, ADCOM/KR, n.s., 22 Aug 80; Ltr (U), T. R. Long, Prog Mgr, NORAD OSTF to Best, Asst Dep for Contracting and Manufacturing, Space Div (AFSC), n.s., 29 Aug 80 (Doc 98).

130. Ltr (U), T. R. Long, Prog Mgr, NORAD OSTF to Hq USAF/ACD/XOK/RDS, "Monthly Progress Report...", 3 Oct 80 (Doc 99).

131. DCS/Communications, Electronics and Computer Resources Staff Agency Historical Report (U), Jul-Dec 80, p 3; Ltr (U), Brig Gen W. D. Powers, DCS/Comm, Elect, & Computer Resources, (NORAD/J-6) to DCS/Pers (NORAD/J-1), "Manning for NCMC OSTF...", 4 Feb 80; DCS/Pers Staff Agency Historical Report (U), Jan-Jun 80.

132. DCS/Communications, Electronics and Computer Resources Staff Agency Historical Report (U), Jul-Dec 80, p 4.

133. Talking Paper (S-Decl 31 Dec 84), "3/6 June False Indications." Capt V. P. Budura, Jr., J-3, 21 Jul 80, with 1 Atch, "Review of Significant Events," 13 Jun 80 (Doc 100); Ltr (S-Decl 1 Jul 00), Lt Gen Hartinger, CINCNORAD to Hon Harold Brown, Sec Def, n.s., 1 Jul 80 (Doc 3); Msg (S-Revw 31 Dec 89), NORAD/J-3F to Hq STC/GE OPS 2, High Wycombe, UK, "Fake Alarm Indications," 072032Z Aug 80 (Doc 101). An accurate and unclassified account of the events can be found in Report of Sen Gary Hart and Sen Barry Goldwater, "Recent False Alerts from the Nation's Missile Attack Warning System," to the Committee on Armed Services, U.S. Senate, 96 Congress, 2nd session, Oct 9 1980 (Doc 102). The events were also discussed at length by Dr. Dinneen, Asst Sec Def, C³I under questioning by reporters during a DOD news briefing, 17 June. (Msg (U), Sec Def/OASDP to AIG 8798, "DOD News Briefing," 172339Z Jun 80 (Doc 103).)

134. See note above.

135. Msg (S-Decl 6 Jun 86), JCS/J-3 to CINCNORAD, "Communications System Segment," 070121Z Jun 80; the MEBU could perform TW/AA functions normally accomplished by the NCS, but with some significant exceptions. These are listed in Msg (S-Revw 31 Dec 86), NORAD/J-3 to JCS/J-3, "MEBU/NCS Functions," 181845Z Jun 80 (Doc 104).

136. Ltr (S-Decl 1 Jul 00), Lt Gen Hartinger, CINCNORAD to Sec Def Brown, n.s., 1 Jul 80 (Doc 3); Ltr (S-Decl 1 Oct 00), Gen Hartinger, CINCNORAD to Sec Brown, n.s., 3 Oct 80 (Doc 1); Msg (S-Revw 29 Oct 00), CINCAD to AIG 951, "CINC's Semiannual Situation Report, 1 Apr-30 Sep 80," 292100Z Oct 80; Report of Sen Gary Hart (D-CO) and Sen Barry Goldwater (R-AZ), "Recent False Alerts from the Nation's Missile Attack Warning System" to the Committee On Armed Services, U.S. Senate, 96 Congress, 2nd session, Oct 9, 1980, pp 7-8, Appendix A (Doc 102).

137. Msg (S-Revw 15 Sep 86), CINCAD/CC to JCS/C³S, "Resumption of 427M Operations," 151632Z Oct 80 (Doc 105); Msg (S-Revw 15 Sep 86), JCS/ CJCS to CINCNORAD, "Resumption of 427M Operations," 172000Z Nov 80 (Doc 106); Msg (S-Decl 17 Nov 86), Hq NORAD/J-3 to OJCS/J-3, same subject, 180307Z Nov 80 (Doc 107); Msg (S-Revw 15 Sep 86), CINCNORAD to OJCS/J-3, same subject, 052230Z Dec 80 (Doc 108). A status report on the 427M after 60 days of Operation, through January 81 is contained in Briefing (U), "Status of NORAD 427M System...", Atch to Ltr (U), Col Kenty, Asst DCS/P1, Pol, Progs and Rqmts, ADC to A/J-5v et al., 9 Feb 81 (Doc 109).

138. A review of these studies and reports and NORAD's evaluation of them is contained in Ltr (S-Revw 1 Feb 87), Col Kenty, Asst DCS/PI, Pol, Progs and Rqmts, ADC to J-5A, et al., "Tactical Warning/Attack Assessment Studies and Reports," 5 Feb 81, with 3 Atchs (Doc 110). (U) A JCS "Umbrella Study" prepared between July and December 1980 examined 24 recent comprehensive studies and identified 145 specific and eight general improvements which should be pursued. Significantly, the JCS study group found the majority of findings and recommendations it reviewed were valid and receiving adequate attention and resources. NORAD urged that the recommendations should be prioritized since limited resources would prevent giving all equal attention. NORAD said the System Integration Office would review the recommendations as part of its effort to consider the total TW/AA system. (Memorandum (S-US Personnel Only), LtCol S. R. Newland, Acting Chairman, Study Group, to CINCNORAD, "Tactical Warnings/Attack Assessment, 24 Dec 80, with 1 Atch: OJCS Tactical Warning/Attack Assessment Study Group Final Report, Executive Summary); Atchs 2 and 3 to SSS (S-Revw 12 Jan 87), Maj Gen C. A. LaFrance, DCS/PI, Pol, Progs and Rqmts, NORAD to CC, same subject, 12 Jan 89; Msg (U), NORAD/J-5 to OJCS/SC3S, "Tactical Warning/Attack Assessment Study," 192100Z Jan 81 (Doc 111).)

139. Msg (U), Hq USAF/IG to CINCSAC et al., "Review of USAF Organization Supporting Air Force Ballistic Missile TW/AA Systems," 071800Z Jul 80.

140. Report (S-Revw 1 Sep 00 Privileged Document), "Special Management Review...," 3 Jul 80, Vol. I, Summary, Atch to Ltr (U), Gen Powers, DCS/Comm, Elect, & Computer Resources, NORAD to CC et al., same subject, 30 Sep 80 (Doc 112).

141. Ltr (U), Gen Lew Allen, Jr., CSAF to ADC/CC et al., "Implementation of Recommendations...", 8 Oct 80 (Doc 113); Ltr (U), Brig Gen Lindeman, DCS/PI, Pol, Progs and Rqmts, ADC to USAF/XO, "Implementation of Recommendations...", 7 Nov 80, with 1 Atch, "ADC Implementation Plan." (Doc 114); Msg (S-Revw 31 Dec 00), Hq USAF/XOOR to Hq ADC/XP, "TW/AA Implementation Plan," 041245Z Dec 80 (Doc 115); Msg (U), Hq ADC/XP to Hq USAF/XOOR, "TW/AA System Review...", 151705Z Dec 80 (Doc 116); Ltr (S-Revw 12 Dec 87), Gen Lindeman, DCS/PI, Pol, Progs and Rqmts, ADCOM to USAF/XO, "Draft... (PMD) for... (TW/AA) System," 12 Dec 80, with 1 Atch "PMD" (Doc 116A).

142. Ltr (U), Col R. L. Binford, Dep Dir, M&O, Hq USAF to ADC/DPQ, "Implementation of Tactical Warning/Attack Assessment Systems Engineer Organization," 24 Oct 80 (Doc 117); Memo for DO, from Col J. E. Strub, Dir, User Interface and Config Control (DOP), "Status of Implementing the Leaf Report," 31 Oct 80 (Doc 118); Msg (U), ADC/CV to SAC/CV, "General Officer Steering Group...", 282306Z Nov 80; Atch (U), "ADC Implementation Plan," p 6, to Ltr (U), Gen Lindeman, DCS/PI, Pol, Progs and Rqmts, ADC to Hq USAF/XO, "Implementation of Recommendations...", 7 Nov 80 (Doc 114); Ltr (U), Gen Lindeman, DCS/PI, Pol, Progs and Rqmts, ADC to Hq USAF/XO, "Draft Program Management Directive...", 12 Dec 80.

143. ADC SO GC-10, 11 Dec 80.

144. SIO Briefing (U), Atch to Ltr, Col Kenty, Asst DCS/P1, Pol, Progs and Rqmts, ADC to XPA et al., same subject, 26 Feb 81 (Doc 119).

145. Msg (U), Sec Def/OASDPA to Public Affairs/Information, "DOD News Briefing," 172339Z Jun 80 (Doc 103); Howard Silber, "Gen Jones: Computer Error was no Brink-of-War Crisis," Omaha World Herald, 13 Jun 80,

146. Report of Sen Hart and Sen Goldwater, "Recent False Alerts from the Nation's Missile Attack Warning System," to the committee on Armed Services, U.S. Senate, 96th Congress, 2nd Session, p 8 (Doc 102).

147. Glenn Urban, "General says NORAD the 'Best'," Colorado Springs Gazette Telegraph, 27 Jun 80, p-3B; Speech by Gen Hartinger, CINCNORAD, at Air Force Association Symposium, 24 Oct 80.

148. Briefing (C-Rew Dec 99) to Gen J. E. Hill, CINCNORAD, by Capt V. P. Budura, ADCOM/DOPC, "Tactical Warning for Europe," 6 Sep 79 (Doc 120).

149. JCS 2308/794-1 (S-Dec1 24 May 84), "Report by the J-3 to the JCS on Ballistic Missile Attack Warning," 24 May 78; Msg (S-GDS 86), JCS to CINCAD, "Ballistic Missile Warning," 051906Z Jun 78.

150. Msg (S-XGDS-3), ADCOM to JCS, "Ballistic Missile Attack Warning," 111700Z Jul 78; Ltr, (S-Dec1 31 Dec 08), Col R. M. Kronbusch, Dir, MSI and Sp Def/XPD to XP, "Trip Report On Visit to USAF-EUCOM-SHAPE," 27 Oct 78 (Doc 121); SSS (S-Dec1 31 Dec 94), Lt Col M. Waynik, Jr., Ch, Sys Cont Div (DOP) to A/DO, "Missile Warning to NATO," 27 Dec 78 (Doc 122); Msg (S-Dec1 11 Apr 85), Hq USAF/XOX to JCS/J-3 and ADCOM/DO, "Ballistic Missile Attack Warning," 132115Z Apr 79.

151. Msg (U), JCS/J-3 to ADCOM/DO, "Ballistic Missile Warning," 141351Z Jul 78.

152. Briefing, "Tactical Warning for Europe" (Doc 120); Ltr (U), Lt Gen (CF) K. E. Lewis, DCINCNORAD to Vice Admiral Thor Hanson, USN, Dir, Joint Staff/JCS, U.S., 10 Oct 79, with 1 Atch: "Concept of Operations for Provision of Ballistic Missile Attack Warning to Europe," (S-Rew 6 Sep 99), 6 Sep 79 (Doc 123). The reaction of potential European users was favorable. (See Interest Paper on a Concept of Operations for European Warning (U), Action Officer Capt V. P. Budura/DOPC, 3 Oct 79 (Doc 124).)

153. Ltr (U), Col J. R. Schafer, Dir, Sys/Config, ADCOM to Col J. Lipphicott, Ops Div, SHAPE/SHOC, U.S., 4 Dec 79 (Doc 125); Ltr (C-Dec 11 Dec 84), BG Campbell, Asst DCS/O, NORAD to Maj Gen J. Ahmann, AC of S/O, EUCOM, n.s., 28 Dec 79, with 1 Atch: "NORAD-SHAPE Memorandum of Agreement for Exchange of Early Warning Information" (S-Dec 11 Dec 89).

154. Memo for CINCAD et al., (S-Dec 7 Feb 86), "Concept of Operations for European Warning," (SM-125-80), Col H. D. Neely, Sec, Joint Staff, 26 Feb 80. JCS had approved 15 February.

155. NORADR 55-10 (S-Dec 31 Dec 84), "NORAD/SHAPE Memorandum of Agreement for Exchange of Early Warning Information," 30 May 80 (Doc 126); Ltr (C-Revw 28 Jul 84), RADM S. H. Packer, Dir of Ops/J-3, EUCOM to Gen Brown, DCS/O, J-3, NORAD, 28 Jul 80 (Doc 127); Msg (S-Revw 26 Aug 86), NORAD/J-3 to USCINCEUR/ECJ3, personal from Gen Brown to RADM Packer, "NORAD/EUCOM European Warning Efforts," 071830Z Oct 80 (Doc 128); SSS (S-Revw 26 Aug 86); Col Strub, Dir, User Interface and Config Control/J-3P to N/J-3, "European Warning Conference, 9-10 Oct 80," 14 Oct 80, with 1 Atch: Action Items Highlights (S-Revw 26 Aug 86) (Doc 129); SSS (S-Revw 16 Dec 00), Gen Brown, DCS/O, NORAD to N/J-2 et al, "NORAD Briefings to the European Warning Conference, 9-10 Oct 80," 16 Dec 80, with 1 Atch: "European Concept Review and Implementation Status," (Doc 130).

156. Ltr (U), Col Strub, Dir, User Interface/Config Control (J-3P) to J-6S, "European Warning Program Modification Requests," 15 Sep 80 (Doc 131). A good review of European Warning efforts to late 1980 is contained in Talking Paper on European Warning (S-Revw 10 Sep 00), prep by Capt Budura, J-3PC, 10 Sep 80 (Doc 132).

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158. Talking Paper On European Warning (S-Revw 10 Sep 80), prep by Capt Budura, J-3PC, 10 Sep 80 (Doc 132); SSS (S-Revw 26 Aug 86), Col Strub, Chairman, European Warning Working Group to N/J-3, "European Warning," 9 Dec 80; Msg (U), NORAD/J-3 to Hq Strike Command (STC) (RAF), "NCMC/ UKRAOC Hot Line," 302030Z Dec 80 (Doc 134); Msg (S-Revw Dec 99), NORAD/J3P to Hq Strike Command (RAF), "European Warning Voice. Tell Procedures," 181903Z Dec 80 (Doc 135).

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CHAPTER III - SPACE DEFENSE

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11. (contd) Rice, ADCOM/J-3F, 9 Nov 81; Ltr (U), Capt M. R. MacDonald (CF), Ch, Deep Space Surveillance Br, NORAD/J-3F, "Report of Official Visit," 23 Dec 80.

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DEW Line	Distant Early Warning Line
DO	Directorate of Operations
DOD	Department of Defense
DPG	Defense Policy Guidance
DSARC	Defense (OSD) Systems Acquisition Review Council
DSP	Defense Support Program
DT&E	Development Test and Evaluation
ECCM	Electronic Counter-Countermeasure
ECM	Electronic Countermeasure
EMP	Electromagnetic Pulse
EOC	Equivalent Operational Capability
EPARCS	Enhanced Perimeter Acquisition Radar Attack Characterization System
EPATS	Earliest Possible Arrival Times
ERS	Experimental Radar System
ESD	Electronics Systems Division, AFSC
ESSC	Electronics Space Systems Corporation
EUCOM	European Command
FACC	Ford Aerospace & Communications Corporation
FCS	Full Communication Service
FIS	Fighter Interceptor Squadron
FOC	Full Operational Capability
46 AERODW	46th Aerospace Defense Wing
FOT&E	Follow-on Operational Test and Evaluation
4C	Command, Control, Communications Corporation
FY	Fiscal Year
GCN	Ground Communications Network (for DSP)
GEODSS	Ground Based Electro-Optical Deep Space Surveillance
GOR	General Operational Requirement
GPF	General Purpose Forces
GSA	General Services Administration
GTE/SSM	General Telephone & Electronics/Single System Manager
HF	High Frequency
IAP	International Airport
ICD	Interface Control Drawing
I-Day	Implementation Day
IDHS	Intelligence Data Handling System
IOC	Initial Operational Capability
IONDS	Integrated Operational Nuclear Detection System
IOT&E	Initial Operational Test and Evaluation
IRBM	Intermediate Range Ballistic Missile
JCS	Joint Chiefs of Staff
JSS/ROCC	Joint Surveillance System/Regional Operation Control Center
JTD	Joint Table of Distribution
JTIDS	Joint Tactical Information Distribution System
JUSCADS	Joint U.S.-Canada Air Defense Study
KREMS	Kiernan Reentry Measurement Site
L&I	Launch and Impact (report)
LANTCOM	Atlantic Command